

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of:

Harvey et al.

Serial No.: 10/783,867

Filed: February 19, 2004

For: HIGH-STRENGTH RUBBER
FORMULATIONS, ROCKET MOTOR
ASSEMBLY INCLUDING SAME, AND
METHOD OF TRANSFERRING LOADS IN
A ROCKET MOTOR ASSEMBLY (as
amended)

Confirmation No.: 7545

Examiner: N. Nutter

Group Art Unit: 1711

Attorney Docket No.: 2507-5732.2US
(21806-US-04)

**VIA ELECTRONIC FILING
March 5, 2007**

BRIEF ON APPEAL

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sirs:

This brief is submitted as a single copy pursuant to 37 C.F.R. § 41.37 and in the format required by 37 C.F.R. § 41.37(c)(1) with the fee required pursuant to 37 C.F.R. § 41.20(b)(2).

(1) REAL PARTY IN INTEREST

The real parties in interest in the present pending appeal are Alliant Techsystems, Inc., assignee of the pending application as recorded in the United States Patent and Trademark Office on June 26, 2002, at Reel 013062, Frame 0870, and Bank of America, N.A., which possesses a security interest in the pending application as recorded in the United States Patent and Trademark Office on May 28, 2004, at Reel 015016, Frame 0890.

(2) RELATED APPEALS AND INTERFERENCES

Neither the Appellants, the Appellants' representative, nor the Assignee is aware of any pending appeal or interference which would directly affect, be directly affected by, or have any bearing on the Board's decision in the present pending appeal.

(3) STATUS OF CLAIMS

Claims 1 through 44 are cancelled.

Claims 62 through 76 are withdrawn from consideration.

Claims 45 through 61 stand rejected.

No claims are allowed.

The rejections of claims 45 through 61 are being appealed.

(4) STATUS OF AMENDMENTS

The proposed amendments to the Specification and drawings presented in the Amendment under 37 C.F.R. § 1.116, filed December 4, 2006, were denied entry in the Advisory Action mailed December 21, 2006.

(5) SUMMARY OF CLAIMED SUBJECT MATTER

Independent claim 45 provides a rocket motor assembly comprising a shear ply interposed between a rocket motor case and a skirt, the shear ply comprising a rubber component cured from a precursor composition comprising: a first hydrogenated nitrile conjugated-diene copolymer modified by a metal salt unsaturated carboxylic acid ester, wherein the first hydrogenated nitrile conjugated-diene copolymer is derived from a first composition comprising

a first ethylenically unsaturated nitrile and a first conjugated diene; a second hydrogenated nitrile conjugated-diene copolymer derived from a second composition comprising a second ethylenically unsaturated nitrile and a second conjugated diene, wherein the second hydrogenated nitrile conjugated-diene copolymer is not modified with a metal salt unsaturated carboxylic acid ester; and a curing agent. Specification at page 3, lines 1-5, 18-20, and 25-27; page 4, lines 1-12, and 18-21; page 5, line 29 through page 6, line 2; page 9, lines 10-16.

(6) GROUND OF REJECTION TO BE REVIEWED ON APPEAL

A. Whether claims 45-61 are unpatentable under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

B. Whether claims 58 and 59 are unpatentable under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

C. Whether claims 45 through 61 are unpatentable under 35 U.S.C. § 112, second paragraph, as failing to particularly point out and distinctly claim the subject matter which the Appellants regard as the invention.

D. Whether claims 45-61 are unpatentable under 35 U.S.C. § 103(a) as being obvious over Jonen *et al.* (U.S. Patent 5,860,883); over Onaka *et al.* (U.S. Patent 6,240,993); over Morris *et al.* (U.S. Patent 6,352,488); over Billups (U.S. Patent 6,443,866); or over Nagata *et al.* (U.S. Patent 6,739,854).

E. Whether the introduction of new FIG. 5 in the Amendment filed August 22, 2006, constitutes new matter under 35 U.S.C. § 132(a).

F. Whether the introduction of new paragraph [0021.1] in the Amendment filed August 22, 2006, constitutes new matter under 35 U.S.C. § 132(a).

G. Whether the amendment to paragraph [0035] in the Amendment filed August 22, 2006, constitutes new matter under 35 U.S.C. § 132(a).

(7) ARGUMENT

(i) 35 U.S.C. § 112, first paragraph, enablement

Claims 45 through 61 stand rejected under 35 U.S.C. § 112, first paragraph, as assertedly failing to comply with the enablement requirement.

Independent claim 45, as amended, recites “a rocket motor assembly, comprising: a shear ply interposed between a rocket motor case and a skirt, the shear ply comprising a rubber component cured from a precursor composition comprising: a first hydrogenated nitrile conjugated-diene copolymer modified by a metal salt unsaturated carboxylic acid ester, wherein the first hydrogenated nitrile conjugated-diene copolymer is derived from a first composition comprising a first ethylenically unsaturated nitrile and a first conjugated diene; a second hydrogenated nitrile conjugated-diene copolymer derived from a second composition comprising a second ethylenically unsaturated nitrile and a second conjugated diene, wherein the second hydrogenated nitrile conjugated-diene copolymer is not modified with a metal salt unsaturated carboxylic acid ester; and a curing agent.”

Alleged Basis of the Rejection

The Examiner, in the Office Action mailed May 12, 2006, at page 3, alleges that

There is no disclosure to teach the “rocket motor assembly,” as herein recited and claimed. No guidance is given as to what the “rocket motor assembly” may comprise, or even how it is made. The disclosure is drawn to a composition that may be used in “high temperature shear ply applications,” paragraph [0002]. Nothing specific is shown wherein the assembly of a rocket motor is taught. As such, the artisan would be required to proceed under the undue burden of experimentation to determine what is being claimed.

Adequate Enablement Exists in the Specification Coupled with the Information Known in the Art

“The test of enablement is whether one of reasonable skilled in the art could make or use the invention from the disclosure in the patent coupled with information known in the art without undue experimentation.” *U.S. v. Telectronics, Inc.*, 857 F.2d 778, 785 (Fed. Cir. 1991) (emphasis added). Further, “[a] patent need not teach, and preferably omits, what is well known in the art.” *In re Buchner*, 929 F.2d 660, 661 (Fed. Cir. 1991) (emphasis added).

Appellants respectfully submit that the Specification, as filed, makes clear reference to rocket motor assemblies being part of the present invention. More Specifically, ¶ [0009] of the Specification relates that “the present invention provides a rocket motor assembly comprising a

shear ply constructed and arranged for transferring loads between a coupled casing and a skirt of the rocket motor assembly.”

¶ [0014] of the Specification relates "a method for coupling a skirt to a composite rocket motor case of a rocket motor engine" and that "this aspect of the invention involves providing a rubber shear ply comprising the rubber component of this invention and interposing the rubber shear ply between a skirt and a composite rocket motor case of a rocket motor assembly.”

¶ [0035] of the Specification relates that

Another aspect includes a method of making a shear ply material using the rubber composition and precursor. The aforementioned method of making the rubber composition may be modified to include making a shear ply for use in connecting a skirt to a rocket motor. This method includes the step of obtaining a precursor mixture as described above, adding a curing agent, activating the curing agent to polymerize the mixture, forming a laminate using the mixture, and adapting the laminate for use as a shear ply connecting a skirt with a rocket motor.

Appellants further submit that one of ordinary skill in the art understands what a "rocket motor assembly" comprises as well as how to build and use one. *See, e.g.,* WO 01/04198 A1, which discloses a "rocket motor assembly." Further, Appellants note that rocket motors are a mature and predictable area of art with rocket motor assemblies having been created and utilized since at least the 1940s. Given the rocket motor assemblies are well known in the art, applicants omitted an in depth description of such assemblies as the Federal Circuit has directed that such material is preferably omitted. *See, e.g., In re Buchner*.

In view of the foregoing, Appellants respectfully submit that one of ordinary skill in the art could make or use the invention with very little or no experimentation as 1) rocket motor assemblies and their construction are well known in a mature and predictable art; 2) the location of the shear ply within that rocket motor is explicitly stated in Specification in at least ¶¶ [0009], [0014], and [0035]; and 3) the location of the shear ply within that rocket motor is explicitly stated in claim 45, which recites "a shear ply interposed between a rocket motor case and a skirt." Consequently, Appellants respectfully submit that claim 45 is enabled as the disclosure in the application, coupled with information known in the art, allows one of ordinary skill in the art to make and use the present invention without undue experimentation. Accordingly, Appellants

respectfully request the withdrawal of the rejection of claim 45 under 35 U.S.C. § 112, first paragraph, for lack of enablement, and reconsideration of same.

Further as claims 46-61 depend, directly or indirectly, from claim 45, Appellants respectfully submit that these claims are enabled, *inter alia*, as depending from an enabled base claim.

(ii) 35 U.S.C. § 112, first paragraph, written description

Claims 58 and 59 stand rejected under 35 U.S.C., § 112, first paragraph, as assertedly failing to comply with the written description requirement.

Claim 58, including all of the elements of the claim from which it depends, recites “a rocket motor assembly, comprising:

a shear ply interposed between a rocket motor case and a skirt, the shear ply comprising a rubber component cured from a precursor composition comprising:

a first hydrogenated nitrile conjugated-diene copolymer modified by a metal salt unsaturated carboxylic acid ester, wherein the first hydrogenated nitrile conjugated-diene copolymer is derived from a first composition comprising a first ethylenically unsaturated nitrile and a first conjugated diene;

a second hydrogenated nitrile conjugated-diene copolymer derived from a second composition comprising a second ethylenically unsaturated nitrile and a second conjugated diene, wherein the second hydrogenated nitrile conjugated-diene copolymer is not modified with a metal salt unsaturated carboxylic acid ester; and

a curing agent;

wherein carbon-carbon double bonds in each of the first hydrogenated nitrile conjugated-diene copolymer and the second hydrogenated nitrile conjugated-diene copolymer are hydrogenated to 85% to 95% saturation.”

Claim 59 is substantially similar to claim 58 except in that “the carbon-carbon double bonds in each of the first hydrogenated nitrile conjugated-diene copolymer and the second hydrogenated nitrile conjugated-diene copolymer are hydrogenated to 90% to 92% saturation.”

Alleged Basis of the Rejection

The Examiner, in the Office Action mailed May 12, 2006. at page 3, alleges that that “the recitations as to hydrogen saturation are not shown in the Specification, as originally filed.”

Adequate Written Description Exists in the Specification and the Original Claims

“To satisfy the written description requirement, a patent Specification must describe the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention. *See, e.g., Moba B.V. v. Diamond Automation, Inc.*, 325 F.3d 1306, 1319 (Fed. Cir. 2003); and M.P.E.P. § 2163(I).

In addition, “[a]n applicant shows possession of the claimed invention by describing the claimed invention with all of its limitations using such descriptive means as words ... that fully set forth the claimed invention.” *Lockwood v. American Airlines, Inc.*, 107 F.3d 1656, 1572 (Fed. Cir. 1997).

Appellants submit that written description for claims 58 and 59 can be found at least in original claims 14 and 15 of the application. Original claim 14 recites “[t]he rubber component of claim 1, wherein carbon-carbon double bonds in each of the first and second hydrogenated nitrile conjugated-diene copolymers are hydrogenated to between about 85% and about 95% saturation.”

Original claim 15 recites “[t]he rubber component of claim 1, wherein carbon-carbon double bonds in each of the first and second hydrogenated nitrile conjugated-diene copolymers are hydrogenated to between about 90% and about 92% saturation.”

As such, Appellants respectfully submit that adequate written description for the saturation levels noted in claims 58 and 59 existed in the application as filed as original claims 14 and 15 demonstrate possession of the invention by describing the subject matter of claim 58 and 59 with all limitations using such descriptive means as words that fully set forth the claimed invention.

In addition, in order to remove the issue for appeal, Appellants attempted, in the amendment under 37 C.F.R. § 1.116 submitted December 4, 2006, to amend the body of the Specification to include the material presented in original claims 14 and 15. Therein Appellants noted that “[t]he claims as filed in the original Specification are part of the disclosure and, therefore, if an application as originally filed contains a claim disclosing material not found in

the remainder of the Specification, the applicant may amend the Specification to include the claimed subject matter.” *In re Benno*, 768 F.2d 1340 (Fed. Cir. 1985).

The Advisory Action mailed December 21, 2006, appears not to have entered the amendments to the Specification to include the subject matter of original claims 14 and 15. No reason appears to be given.

In view foregoing, Appellants respectfully submit that adequate written description for claims 58 and 59 exists in the application as filed. Consequently, Appellants respectfully request the withdrawal of the rejections of claims 58 and 59 under 35 U.S.C., § 112, first paragraph and reconsideration of same.

To the extent the Appellants are required to amend the Specification to order to include therein the subject matter of original claims 14 and 15, Appellants respectfully request that they be allowed to do so under the holding of *In re Benno*.

iii) 35 U.S.C. § 112, second paragraph, written description

Claims 45 through 61 stand rejected under 35 U.S.C. § 112, second paragraph, as assertedly being indefinite for failing to particularly point out and distinctly claim the subject matter which the Appellants regard as the invention.

Alleged Basis of the Rejection

Examiner alleges, in the Office Action mailed September 28, 2006, at page 4, that “[t]he recitation of the ‘rocket motor assembly’ is not clear as to its proper metes and bounds.” It is further alleged that “[n]o guidance is given as to what the ‘rocket motor assembly’ may comprise, or even how it is made, and, as such, the claims are deemed to be vague and confusing.” *Id.*

The Claims are Definite in View of the Disclosure and the Teachings of the Prior Art

“Definiteness of claim language must be analyzed, not in a vacuum, but in light of A) the content of the particular application disclosure; B) the teachings of the prior art; and C) the claim interpretation that would be given by one possessing the ordinary level of skill in the pertinent

art.” M.P.E.P. § 2173.02. “Accordingly, a claim term that is not used or defined in the Specification is not indefinite if the meaning of the claim term is discernible.” *Id.*

Appellants respectfully submit that, as rocket motor assemblies are well known in the art (*see, e.g.*, WO 01/04198 A1), one of ordinary skill in the art would be able to discern the meaning of “a rocket motor assembly” and readily understand its metes and bounds. In addition, the Specification and the claims specifically note that the rocket motor assembly contains certain portions, to wit: a case or casing, a skirt, and a shear ply. *See, e.g.*, ¶¶ [0009], [0014], and [0035] and claim 45. As such, Appellants submit that the claim term “rocket motor assembly” cannot be indefinite. Consequently, Appellants respectfully request the withdrawal of the rejections of claims 45-61 under 35 U.S.C. § 112, second paragraph, and reconsideration of same.

iv) 35 U.S.C. § 103(a)

Claims 45 through 61 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Jonen *et al.* (U.S. Patent 5,860,883), Onaka *et al.* (U.S. Patent 6,240,993), Morris *et al.* (U.S. Patent 6,352,488), Billups (U.S. Patent 6,443,866), or Nagata *et al.* (U.S. Patent 6,739,854) (collectively hereinafter “the cited references”). Appellants respectfully traverse the rejections, as hereinafter set forth.

Alleged Basis of the Rejections

The Examiner asserts, at page 5 of the Office Action mailed September 28, 2006, that “[e]ach of the references . . . teach the manufacture of power transmission belts that may comprise a first hydrogenated nitrile conjugated-diene copolymer modified by a metal salt unsaturated carboxylic acid ester, a second hydrogenated nitrile conjugated-diene copolymer and a curing agent.” The Examiner further asserts that “[t]he references alone and collectively show the blend of resins and the various aspects of these compositions as including those parameters as recited herein and claimed.” *Id.* at page 6. Further it is asserted that “[t]hough the reference are not drawn to the concept of a rocket motor assembly, *per se*, they are drawn to compositions suitable for use as the shear ply of a motor assembly as disclosed and claimed herein.” *Id.*

The Examiner additionally alleges that “any patentability to the claims resides in the composition, *per se*,” and that “[a]pplicants tacitly acknowledge this with their amendment to claim 45 regarding the second hydrogenated nitrile copolymer.” *Id.* at page 8. Last, the Examiner asserts that “Appellants fail to argue the merits of the rejections and imply that the instant claims are patentable over the references because they fail to show a rocket motor assembly. This is the same reason that the rejections are made herein under 35 U.S.C. 112, because Appellants fail to show such an assembly as well.” *Id.*

Appellants do Not Acknowledge that Patentability Resides Only in the Shear Ply

As a preliminary matter, Appellants wish to address the Examiner’s assertion that the Appellants tacitly acknowledge that any patentability to the claims resides in the shear ply composition *per se*. Office Action mailed September 28, 2006, at page 8. Appellants note that “the claimed invention must be considered as a whole.” M.P.E.P. § 2141(II). As such, Appellants respectfully deny that the patentability of the claims resides only in the composition of the shear ply. Appellants respectfully submit that patentability resides in the claim as a whole, and that no particular portion of a claim makes it any more patentable than any other portion.

The References do not Teach or Suggest Each and Every Element of the Claims

Appellants respectfully submit that the 35 U.S.C. § 103(a) obviousness rejections of claims 45 through 61 are improper as the references fail to teach or suggest each and every element of the claims. *See, e.g., In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991). Specifically, the references fail to teach the use of the shear ply composition in a rocket motor as recited by claim 45. The Examiner agrees, noting at page 6 of the Office Action mailed September 28, 2006 that “the references are not drawn to the concept of a rocket motor assembly.” The Examiner apparently indicates that, because the Examiner feels that the Appellants have failed to provide adequate written description for a rocket motor assembly, that this element can be ignored for the purposes of interpreting the claims. *Id.* at pages 6 and 8.

“All words in a claim must be considered in judging the patentability of claim against the prior art” *In re Wilson*, 424 F.2d 1382 (CCPA 1970). “The fact that claim

terms may be indefinite does not make the claim obvious over the prior art.” M.P.E.P. § 2173.06. When there is a great deal of confusion and uncertainty as to the proper interpretation as the elements of the claim [as seems to be the case here regarding “a rocket motor assembly”], it is generally not proper to reject a claim on the basis of prior art. *Id.*

In view of the foregoing, Appellants respectfully submit that the rejections under 35 U.S.C. § 103(a) are improper as the references do not teach each and every element of the claims.

No Motivation to Modify the References has been Provided

Appellants further submit that the rejections under 35 U.S.C. § 103(a) are improper as the Examiner has provided no motivation to modify the references. “To establish a *prima facie* case of obviousness . . . there must be some suggestion or motivation, either in the references themselves, or in the knowledge generally available to one of ordinary skill in the art to modify the reference.” *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991). Appellants note that the Examiner agrees that the references must be modified in order to make the present claims obvious; to wit: “the references are not drawn to the concept of a rocket motor assembly.” Office Action mailed September 28, 2006, at page 6. Appellants respectfully submit that the Examiner has not established a *prima facie* case of obviousness as the Examiner has not provided any motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references and use a shear ply composition as part of a rocket motor assembly.

In view of the foregoing, Appellants respectfully request the withdrawal of the rejections of claims 45-61 under 35 U.S.C. § 103(a) and reconsideration of same.

(v) New Matter, FIG. 5

FIG. 5 stands objected to under 35 U.S.C. § 132(a) as assertedly introducing new matter. FIG. 5, presented in the Amendment filed August 22, 2006, appears in the Evidence Appendix.

Appealable Subject Matter

Appellants note that a holding of new matter is appealable subject matter where the alleged new matter affects the claims. *See* M.P.E.P. § 608.04(c). Appellants respectfully submit that the alleged new matter (FIG. 5) affects the claims as the nature of the subject matter of the claims admits of illustration by a drawing. *See* 35 U.S.C. § 113.

Alleged Basis of the Objection

The Examiner, in the Office Action mailed September 28, 2006, at pages 2-3, alleges that “[t]he added material which is not supported by the original disclosure is as follows: the recitations of newly added paragraph [0021.1] and the attendant FIG. 5 have no support in the Specification as originally filed.”

Support Exists in the Specification for the Material in FIG. 5

Appellants respectfully submit that FIG. 5, as submitted in the Response filed August 11, 2006, does not constitute new matter as FIG. 5 graphically depicts the matter discussed in the last sentence of ¶ [0014]; to wit: “interposing the rubber shear ply between a skirt and composite rocket motor case of a rocket motor assembly.” As depicted in FIG. 5, shown generally is a rocket motor assembly 8, having shear ply 2, interposed between rocket motor case 4 and a skirt 6. As such, the material depicted in FIG. 5, as amended, is not new matter as it depicts exactly the description appearing at ¶ [0014] of the Specification as filed.

Following the objection to FIG. 5, Appellants submitted an amended FIG. 5 in the amendment under 37 C.F.R. § 1.116, filed December 4, 2006. This amended FIG. 5, presented in the evidence appendix, depicts in the most graphically simple terms the subject matter described at ¶ [0014] of the Specification. Entry of the amendment under 1.116 was denied entry in the Advisory Action mailed December 21, 2006.

In view of the foregoing, Appellants respectfully submit that FIG. 5, as provided in the Response of August 11, 2006 does not constitute new matter. Consequently, Appellants respectfully request the withdrawal of the objection to FIG. 5 under 35 U.S.C. § 132(a).

In the alternative, Appellants respectfully submit that amended FIG. 5, as presented in the amendment under 37 C.F.R. § 1.116, filed December 4, 2006 does not constitute new matter.

Consequently, Appellants respectfully request that the amended FIG. 5 be entered if FIG. 5 as originally presented is not entered.

(vi) New Matter, ¶ [0021.1]

¶ [0021.1] stands objected to under 35 U.S.C. § 132(a) as assertedly introducing new matter.

Appealable Subject Matter

Appellants note that a holding of new matter is appealable subject matter where the alleged new matter affects the claims. *See* M.P.E.P. § 608.04(c). Appellants respectfully submit that the alleged new matter (¶ [0021.1]) affects the claims as the nature of the subject matter of the claims admits of illustration by a drawing. *See* 35 U.S.C. § 113.

Alleged Basis of the Objection

The Examiner, in the Office Action mailed September 28, 2006, at pages 2-3, alleges that “[t]he added material which is not supported by the original disclosure is as follows: the recitations of newly added paragraph [0021.1] and the attendant FIG. 5 have no support in the Specification as originally filed.”

Description of FIG. 5 is Required in the Brief Description of the Drawings

37 C.F.R. § 1.74 directs that “[w]hen there are drawings, there shall be a brief description of the several views of the drawings.” Appellants respectfully submit that the material presented in ¶ [0021.1] is mandated by 37 C.F.R. § 1.74 as it provides the required brief description of FIG. 5, to wit: “FIG. 5 is a schematic illustration of a rocket motor assembly utilizing the rubber component of the present invention.” As noted *supra*, Appellants respectfully submit that FIG. 5 does not contain new matter. Consequently, the brief description of FIG. 5 as provided in ¶ [0021.1] is also not new matter.

In view of the foregoing, Appellants respectfully submit that ¶ [0021.1], does not constitute new matter, but is, in fact, required to be added to the Specification. Consequently, Appellants respectfully request the withdrawal of the objection to ¶ [0021.1] under 35 U.S.C. § 132(a).

(vi) New Matter, ¶ [0035]

¶ [0035] stands objected to under 35 U.S.C. § 132(a) as assertedly introducing new matter.

Appealable Subject Matter

Appellants note that a holding of new matter is appealable subject matter where the alleged new matter affects the claims. *See* M.P.E.P. § 608.04(c). Appellants respectfully submit that the alleged new matter (¶ [0035]) affects the claims as the nature of the subject matter of the claims admits of illustration by a drawing. *See* 35 U.S.C. § 113.

Alleged Basis of the Objection

The Examiner, in the Office Action mailed September 28, 2006, at pages 3, alleges that “[t]he newly added sentence in paragraph [0035] is deemed to be new matter, having no support in the Specification as originally filed.”

Description of FIG. 5 is Required in the Detailed Description

37 C.F.R. § 1.74 directs that “[w]hen there are drawings, . . . the detailed description of the invention shall refer to the different views by specifying the numbers of the figures.” Appellants respectfully submit that the material presented in ¶ [0035] is mandated by 37 C.F.R. § 1.74 as it provides the requisite reference in the Detailed Description to the reference numerals of FIG. 5, to wit: “[t]he shear ply 2 may be interposed between a rocket motor case 4 and a skirt 6 of the rocket motor assembly 8, as shown in FIG. 5.” As noted *supra*, Appellants respectfully submit that FIG. 5 does not contain new matter. Consequently, the brief description of FIG. 5 as provided in ¶ [0035] is also not new matter.

In view of the foregoing, Appellants respectfully submit that ¶ [0035], does not constitute new matter, but is, in fact, required to be added to the Specification. Consequently, Appellants respectfully request the withdrawal of the objection to ¶ [0035] under 35 U.S.C. § 132(a).

(8) CLAIMS APPENDIX

A Claims Appendix is attached hereto

(9) EVIDENCE APPENDIX

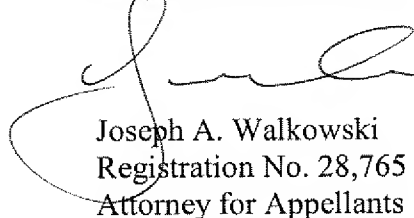
An Evidence Appendix including a listing of documents (A) through (H) and items (A) through (H) themselves is attached.

(10) RELATED PROCEEDINGS APPENDIX

NONE.

Reversal of the Examiner by the Board of Patent Appeals and Interferences as to all asserted grounds of rejection is respectfully solicited.

Respectfully submitted,



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CLAIMS APPENDIX

45. A rocket motor assembly, comprising:
- a shear ply interposed between a rocket motor case and a skirt, the shear ply comprising a rubber component cured from a precursor composition comprising:
- a first hydrogenated nitrile conjugated-diene copolymer modified by a metal salt unsaturated carboxylic acid ester, wherein the first hydrogenated nitrile conjugated-diene copolymer is derived from a first composition comprising a first ethylenically unsaturated nitrile and a first conjugated diene;
 - a second hydrogenated nitrile conjugated-diene copolymer derived from a second composition comprising a second ethylenically unsaturated nitrile and a second conjugated diene, wherein the second hydrogenated nitrile conjugated-diene copolymer is not modified with a metal salt unsaturated carboxylic acid ester; and
 - a curing agent.

46. The rocket motor assembly of claim 45, wherein the first ethylenically unsaturated nitrile and the second ethylenically unsaturated nitrile are identical or different and are each selected to comprise at least one member selected from the group consisting of acrylonitrile and methacrylonitrile.

47. The rocket motor assembly of claim 45, wherein the first ethylenically unsaturated nitrile and the second ethylenically unsaturated nitrile each comprise acrylonitrile.

48. The rocket motor assembly of claim 45, wherein the first conjugated diene and the second conjugated diene are identical or different and are each selected to comprise at least one member selected from the group consisting of butadiene, isoprene, dimethylbutadiene, 1,3-pentadiene, and piperylene.

49. The rocket motor assembly of claim 45, wherein the first conjugated diene and the second conjugated diene each comprise butadiene.

50. The rocket motor assembly of claim 45, wherein the metal salt unsaturated carboxylic acid ester is derived from at least one ethylenically unsaturated monocarboxylic acid and at least one member selected from the group consisting of a metal and a metallic compound, and wherein the at least one ethylenically unsaturated monocarboxylic acid comprises at least one member selected from the group consisting of acrylic acid, methacrylic acid, crotonic acid, and 3-butenic acid.

51. The rocket motor assembly of claim 45, wherein the metal salt unsaturated carboxylic acid ester is derived from at least one ethylenically unsaturated dicarboxylic acid and at least one member selected from the group consisting of a metal and metallic compound, and wherein the at least one ethylenically unsaturated dicarboxylic acid comprises at least one member selected from the group consisting of maleic acid, fumaric acid, and itaconic acid.

52. The rocket motor assembly of claim 45, wherein the metal salt unsaturated carboxylic acid ester comprises at least one element selected from the group consisting of zinc, magnesium, calcium, and aluminum.

53. The rocket motor assembly of claim 45, wherein the metal salt unsaturated carboxylic acid ester comprises zinc dimethacrylate.

54. The rocket motor assembly of claim 45, wherein the curing agent comprises a peroxide curing agent.

55. The rocket motor assembly of claim 45, wherein the curing agent comprises 2,2'-bis(t-butylperoxy)diisopropyl benzene.

56. The rocket motor assembly of claim 45, wherein the curing agent is dispersed in a clay carrier.

57. The rocket motor assembly of claim 45, wherein the precursor composition is essentially free of silica.

58. The rocket motor assembly of claim 45, wherein carbon-carbon double bonds in each of the first hydrogenated nitrile conjugated-diene copolymer and the second hydrogenated nitrile conjugated-diene copolymer are hydrogenated to 85% to 95% saturation.

59. The rocket motor assembly of claim 45, wherein carbon-carbon double bonds in each of the first hydrogenated nitrile conjugated-diene copolymer and the second hydrogenated nitrile conjugated-diene copolymer are hydrogenated to 90% to 92% saturation.

60. The rocket motor assembly of claim 45, wherein the shear ply comprises a laminate of the rubber component and a fibrous material.

61. The rocket motor assembly of claim 60, wherein the fibrous material comprises a graphite fiber/epoxy composite.

EVIDENCE APPENDIX

- (A) U.S. Patent 5,860, 883, issued January 1999 to Jonen *et al.* First presented in the Office Action mailed May 12, 2006.
- (B) U.S. Patent 6,240, 993, issued June 2001 to Onaka *et al.* First presented in the Office Action mailed May 12, 2006.
- (C) U.S. Patent 6,352,488, issued March 2002 to Morris *et al.* First presented in the Office Action mailed May 12, 2006.
- (D) U.S. Patent 6,443,866, issued September 2002 to Billups *et al.* First presented in the Office Action mailed May 12, 2006.
- (E) U.S. Patent 6,739,854, issued May 2004 to Nagata *et al.* First presented in the Office Action mailed May 12, 2006.
- (F) WO 01/04198 A1, published January 18, 2001, to Cordant Technologies, Inc. First presented in the Information Disclosure Statement filed February 19, 2004, and made of record by the Examiner in November of 2004.
- (G) FIG. 5 as presented in the amendment filed August 22, 2006.
- (H) Amended FIG. 5 as presented in the amendment under 37 C.F.R. § 1.116 filed December 4, 2006.